

USING A MODULAR DUST COLLECTOR TO SAVE FLOOR SPACE

Modular cartridge dust collectors address unique installation challenges and can control dangerous dust, provide clean air, and maintain a safe work environment. Using a dust collector that is assembled from individual modules that can be combined into dozens of configurations to fit the specific work environment is a safe, cost-effective way to put dust in its place. This article will discuss modular dust collectors and the problems the equipment could potentially solve.

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When installing a cartridge dust collector, facilities should specify the size and configuration of the collector, filter cartridge, ducting, and explosion protection equipment for their specific application. It's important to consider the amount of floor space available, access limitations to the area housing the unit, and potential future capacity expansions.

A dust collector must be properly sized to run dependably and efficiently at the required airflow. An undersized collector can cause a wide range of problems, including high operating pressure and overloaded filters that require frequent changeouts. These problems could result in operating costs and energy usage that are actually higher for a smaller unit than for a larger one.

Many dust collectors are built as a singular large, welded assembly, which can make installation, space efficiency, and upgrades a challenge. However, dust collectors can also be built from square modules that

are bolted together. These modules offer more flexibility because they can be combined in dozens of configurations to fit the specific application and required air volume.

For example, individual modules can accommodate airflows up to 6,000 cfm and can be assembled to meet airflow requirements above 100,000 cfm. Filter cartridges are mounted in a frame around each module. Dust collector systems made from these modules can take on a variety of shapes, with single boxes forming a row, an L-shape, a square, or a rectangle. The boxes can also be located separately around the plant.

Modular bolted construction flexibility

To fit in small or hard-to-reach areas, modular dust collectors can be shipped disassembled into parts, including the side and roof panels and frames. Here are just a few challenges that modular systems can solve:

Upper-floor installation. Modular systems are ideal when the collector must be installed on an upper floor and the service elevator isn't wide or tall enough to accommodate an entire dust collector that is welded together and cannot be disassembled or even large sections of a collector. The modular components can easily be transported to the workspace and built on-site, piece by piece. Whereas a welded collector would have to be disassembled at the site upon delivery, then reassembled at the desired location in the facility.

Inlets and outlets. The modular bolted construction allows for easy changes to the configuration of inlets and outlets by simply bolting and unbolting them. This is especially convenient during an installation when a specification unexpectedly changes in the design plan and on-the-spot modifications are required.

Low ceiling. A low ceiling and lack of open floor space can provide a challenge for traditional dust

FIGURE 1

A modular dust collection system can be shipped disassembled and assembled on-site to help fit difficult applications.



collectors, as the constraints often make the use of an installation crane impossible. With a modular design, each unit can be brought into the facility with a forklift. The collector is then assembled on the floor to make a complete system.

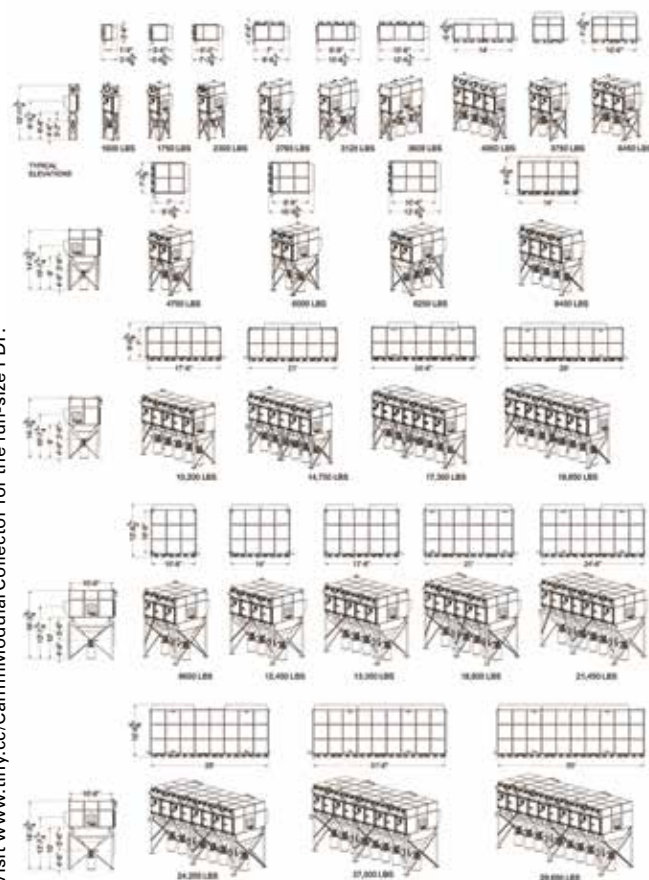
Explosion venting. Modular dust collectors can be used when a dust collector must be located in the center of a facility and requires explosion venting. The explosion venting can be attached to the side of the collector due to the modular design and then vented up through the roof. In addition, modular bolted collectors have a higher pressure rating than welded collectors, which allows for smaller vents.

Ductwork. Modular dust collectors can help avoid complicated ductwork and achieve high system flexibility and reliability. It's possible to configure the system as separate dust collection units installed on individual production cells. Separate dust collection units can be used in conjunction with a larger system made with modules joined together for larger material and bulk material handling, where needed.

Expanding capacity. Dust collection needs often change over time. A facility might increase production

FIGURE 2

Modular dust collection systems can be assembled in a wide range of configurations.



Visit www.tiny.cc/CamfilModularCollector for the full-size PDF.

and require a higher volume of air to collect the dust, or the dust intensity level could increase, meaning the facility is producing more dust at the same air volume. In these situations, the entire dust collector would need to be replaced if it's fabricated in one piece. However, a dust collector that is built modularly can be adapted to handle increased airflow or dust intensities by adding modules with the appropriate fans, vents, and ducting.

Additional modular dust collector benefits

Because modular dust collectors are assembled with bolts and not welded, installation doesn't require a hot work permit, which requires extra production and personnel time. Building the collector with bolted modules is also a safer process, especially in facilities that produce combustible dust, because assembly doesn't introduce an ignition source.

Every job site in the US that engages in hot work outside of a designated area (like a weld shop) requires a permit to document the hazards and the safety measures in place to avoid a fire. The permit must be obtained before the work begins according to OSHA regulations and NFPA standards. OSHA defines hot work as any activity that involves burning, welding, using fire- or spark-producing tools, or that produces a source of ignition.

These permits for temporary hot work operations—like welding to configure a dust collector on site—are designed to identify personnel supervising and conducting the work and the safety precautions they're undertaking to prevent a fire before, during, and after the job. This includes assigning an additional worker to the project to serve as a fire watcher in the production area. The fire watcher must monitor the site during the hot work and after it is completed for several hours to ensure a fire hazard no longer exists. **PBE**

For further reading

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